

## WHAT IS CLAIMED IS:

1. A Dynamic Host Configuration Protocol (DHCP) server, comprising:
  - an Internet Control Message Protocol (ICMP) module that issues an ICMP ping packet, based on an IP address allocation request from a DHCP client, and registers relevant event information in a DHCP ping entry;
  - a determining module that determines whether a reply to the ICMP ping packet came from the DHCP client requesting the IP address allocation or another DHCP client; and
  - a first operation module that conducts a DHCP procedure using the registered relevant event information, if the reply is from the DHCP client requesting the IP address allocation, and changes the registered relevant event information through the ICMP module and issues a new ICMP ping packet, if the reply is not from the DHCP client.
2. The DHCP server of claim 1, wherein the first operation module erases the registered relevant event information from the DHCP ping entry during the DHCP procedure.
3. The DHCP server of claim 1, wherein the DHCP procedure is a process for allocating a requested IP address to the DHCP client requesting the IP address.

4. The DHCP server of claim 1, further comprising:

a verifying module that conducts a system timer loop, the system timer loop is used to periodically verify the relevant event information registered in the DHCP ping entry;

a comparing module that compares an event occurrence time and an out time, which is set in the relevant event information registered in the DHCP ping entry; and

a second operation module that conducts the DHCP procedure using the registered relevant event information and erases the relevant event information from the DHCP ping entry, if the event occurrence time is older than the out time set in the corresponding DHCP ping entry.

5. The DHCP server of claim 4, wherein the DHCP procedure is a process for allocating a requested IP address to the DHCP client requesting the IP address.

6. The DHCP server of claim 4, wherein the second operation module erases the registered relevant event information from the DHCP ping entry during the DHCP procedure.

7. The DHCP server of claim 1, further comprising a system clock device that provides timing information to the DHCP server.

8. A method for allocating an Internet Protocol (IP) address by a Dynamic Host Configuration Protocol (DHCP) server, comprising:

issuing an Internet Control Message Protocol (ICMP) ping packet and registering relevant event information in a DHCP ping entry when an IP address allocation request is received from a DHCP client;

conducting a DHCP procedure using the registered relevant event information and erasing the registered relevant event information from the DHCP ping entry, when a reply to the ICMP ping packet is received from the DHCP client requesting the IP address allocation; and

changing the relevant event information registered in the DHCP ping entry and issuing a new ICMP ping packet, when the reply to the ICMP ping packet is from another DHCP client.

9. The method of claim 8, wherein the relevant event information includes the IP address, a Media Access Control (MAC) address of the DHCP client, and an event occurrence time.

10. The method of claim 8, further comprising discarding the IP address allocation request, received from the DHCP client, when there is no new IP address available for allocation in a DHCP free IP address table.

11. The method of claim 8, further comprising:

operating a system timer loop used to periodically verify the DHCP ping entry;  
comparing an event occurrence time registered in the DHCP ping entry and a set

DHCP ping out time; and

conducting the DHCP procedure using the registered relevant event information  
and erasing the relevant event information from the DHCP ping entry if the registered event  
occurrence time is older than the set DHCP ping packet out time.

12. The method of claim 11, wherein the relevant event information includes the IP  
address, a Media Access Control (MAC) address of the DHCP client, and the event occurrence  
time.

13. The method of claim 11, wherein the system timer loop is operated with a system  
clock device provided in the DHCP server.

14. A server, comprising:

an Internet Control Message Protocol (ICMP) module that issues a ping packet  
according to a received Internet Protocol (IP) address allocation request;

a determining module that determines whether a reply to the issued ping packet  
came from a first client that requested the IP address allocation or from a second client; and

a first operation module that allocates an IP address to the first client if the first client is determined to have sent the reply.

15. The server of claim 14, wherein the first operation module discards the IP address allocation request if the second client is determined to have sent the reply.

16. The server of claim 14, further comprising:  
a comparing module that compares an event occurrence time stored by the ICMP module in a ping entry with an out time set in the ping packet; and  
a second operation module that erases the ping entry if the event occurrence time is older than the out time.

17. The server of claim 14, further comprising a verifying module that repeatedly induces the server to determine whether the reply has been received.

18. A method of allocating an Internet Protocol (IP) address with a server, comprising:  
issuing a ping packet according to a received IP address allocation request;  
determining whether a reply to the issued ping packet came from a first client that requested the IP address allocation or from a second client; and

allocating the IP address to the first client, if the first client is determined to have sent the reply.

19. The method of claim 18, further comprising discarding the IP address allocation request if the second client is determined to have sent the reply.

20. The method of claim 18, further comprising:  
comparing an event occurrence time stored in a ping entry with an out time set in the ping packet; and  
erasing the ping entry if the event occurrence time is older than the out time.

21. The method of claim 18, further comprising repeatedly determining whether the reply has been received.